



Model DF233 Control Valve



Figure 1 DF233 Control Valve

The Dyna-Flo Model DF233 control valve is primarily designed for on/off control of a variety of gases or fluids. These tough valves are manufactured for use as dump valves and feature a low profile and lightweight design that fits into tight locations and makes for easier handling. The DF233 is well suited for many other high pressure gas or fluid applications up to 3750 Psig (25,855 kPag). The DF233 is available in 1 inch and 2 inch sizes, either in a globe or angle style valve body with threaded NPT or flanged connections.

The Dyna-Flo Model DF233 control valve is manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

Features

NACE Service Ready

Standard construction for the DF233 control valve features NACE trim. The valve bonnet and body also conform to NACE MR0175 (National Association of Corrosion Engineers) recommendations.

ASME Class 1500

The DF233 is designed and rated for ASME B16.34 Class 150 - 1500 service.

Live Loaded Packing

Packing for the DF233 control valve is designed to provide a quality stem seal and to prevent the loss of hazardous gases or fluids. The live loaded feature provides for reduced maintenance and positive sealing in temperature and pressure cycling conditions.

Field-Reversible Actuator

Field conversion of the DF233 actuator is designed to be quick and easy. Switch the DF233 from a spring-close to spring-open actuator without any additional parts.

Easily Maintained

The hammer union body to bonnet connection allows for easy removal of the bonnet/actuator for access to trim and packing. Trim removal requires no special tools and is quick and simple. The two piece cage seat allows replacement of the seat ring while using the existing cage making port changes and maintenance more economical.

Low Temperature Materials

The DF233 valve and actuator are constructed with materials that are capable of functioning in temperatures of -40°C.

Open Yoke

The DF233 features an open yoke that allows for the mounting of a feedback arm to facilitate positioners and indicators.

Versatile Trim Material Options

Plug and seat ring materials are available in Carbide, Alloy 6, 440C and soft seat.



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Specifications

Port Diameter

1/4", 3/8", 1/2", 3/4", and 1"

See Table 1 & 2 for details and Port Diameters.

Sizes and Connection Styles

Size: 1 & 2 inch

Rating: ASME 150 / 300 / 600 / 900 / 1500

Connections: NPT / RF / RTJ

See Table 1, 2, & 3 for details and Port Diameters.

Standard Shut-off Classification

ANSI Class IV ANSI/FCI 70-2

Optional Soft Seat ANSI Class VI ANSI/FCI 70-2

Dimensions

See Table 5 (Page 6) & Figures 4 - 5 (Page 7)

Flow Characteristics

Quick Opening

Flow Direction

Up or down (See Table 2)

Maximum Travel

3/8 inch (10 mm)

Material Temperature Capabilities

Body Assembly

-46 to 150°C (-50 to 300°F)

Actuator Assembly

-40 to 82°C (-40 to 180°F)

Body Style

Available in Globe and Angle style

Bonnet/Body Connection

Threaded Hammer Nut

Actuator Configuration

The DF233 utilizes a on/off style spring and diaphragm actuator. Fail action is field-reversible.

Maximum Actuator Casing Pressure

50 Psig (345 kPag)

Effective Actuator Diaphragm Area

33 inches² (213 cm²)

Actuator Pressure Connections

NPS 1/4 inch NPT

Maximum Pressures and Temperatures ¹	200°F (93°C)	300°F (150°C)
	NPS 1-2 inch NPT	2,250 Psig (15,513 kPag)
NPS 1-2 inch Class 600	1,500 Psig (10,342 kPag)	1,454 Psig (10,024 kPag)
NPS 1-2 inch Class 1500	3,750 Psig (25,855 kPag)	3,637 Psig (25,076 kPag)

¹ - The limitations shown are as per ASME B16.34. Refer to the pressure temperature ratings in this standard for all other flange ratings. Do not exceed these ratings.

Available Valve Sizes, Connection Styles and Approximate Weights

Table 1

Port Diameter inch (mm)	Connection Style						
	Threaded lb (kg)	Raised Face (RF) Flanged lb (kg)				Ring Type Joint (RTJ) Flanged lb (kg)	
1 Inch Valve 1/4 (6.4) 3/8 (9.5) 1/2 (12.7) 3/4 (19.7) 1 (25.4)	NPT	Class 150	Class 300	Class 600	Class 900 and 1500	Class 600	Class 900 and 1500
	25 (11)	29 (13)	35 (16)	35 (16)	64 (29)	35 (16)	64 (29)
2 Inch Valve 1/4 (6.4) 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4)	NPT	Class 150	Class 300	Class 600	Class 900 and 1500	Class 600	Class 900 and 1500
	30 (14)	34 (15)	50 (23)	50 (23)	89 (40)	50 (23)	89 (40)



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Maximum Shut-off Pressure Drops

Table 2

Actuator Action	Flow Direction (pressure tends to)	Port Diameter	Number of Springs 0-20 Psig Operating Signal		Number of Springs 0-35 Psig Operating Signal	
			3	6	3	6
			Psi / kPa	Psi / kPa	Psi / kPa	Psi / kPa
Fail Closed	Flow Up (open valve)	1/4"	3,750/25,855	3,750/25,855	3,750/25,855	3,750/25,855
		3/8"	1,672/11,528	3,750/25,855	1,672/11,528	3,750/25,855
		1/2"	770/5,309	1,867/12,873	770/5,309	1,867/12,873
		3/4"	***	684/4,716	***	684/4,716
		1"	***	290/2,000	***	290/2,000
	Flow Down (close valve)	1/4"	1,469/10,128	3,750/25,855	1,469/10,128	3,149/21,712
		3/8"	2,139/14,748	2,600/17,926	2,139/14,748	3,750/25,855
		1/2"	3,750/25,855	3,750/25,855	3,750/25,855	3,750/25,855
		3/4"	1,710/11,790	942/6,495	3,636/25,069	2,424/16,713
		1"	784/5,405	392/2,703	1,512/10,425	1,064/7,336
Fail Open	Flow Up (open valve)	1/4"	3,750/25,855	***	3,750/25,855	3,750/25,855
		3/8"	2,272/15,665	***	3,750/25,855	3,750/25,855
		1/2"	1,193/8,225	***	3,719/25,642	2,035/14,031
		3/4"	385/2,654	***	1,507/10,390	759/5,233
		1"	177/1,220	***	807/5,564	345/2,379
	Flow Down (close valve)	1/4"	2,244/15,472	***	3,750/25,855	3,380/23,304
		3/8"	3,750/25,855	***	3,750/25,855	3,750/25,855
		1/2"	3,750/25,855	***	3,750/25,855	3,535/24,373
		3/4"	897/6,185	***	897/6,185	1,646/11,349
		1"	672/4,633	***	672/4,633	1,288/8,880

*** - Valve will not shut off.

DF233 C_v Values

Table 3

Body	Port Size Inch (mm)	C _v Value (100% Travel)
Flow Up	1/4 (6.4)	1.68
	3/8 (9.5)	3.82
	1/2 (12.7)	5.70
	3/4 (19.1)	11.6
	1 (25.4)	15.5
Flow Down	1/4 (6.4)	1.68
	3/8 (9.5)	3.82
	1/2 (12.7)	6.19
	3/4 (19.1)	13.0
	1 (25.4)	18.0



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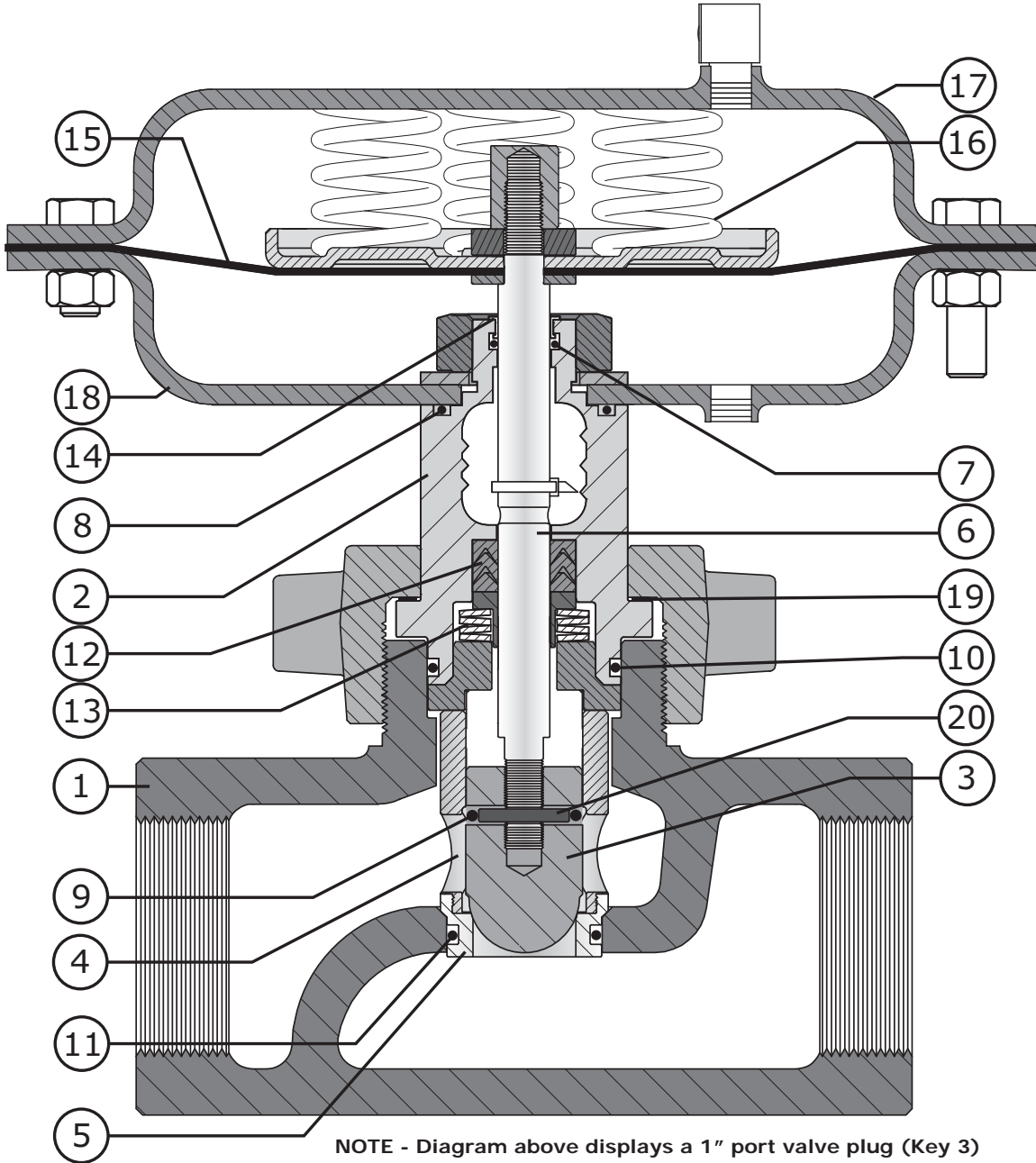


Figure 2 Cross-section of DF233 2 inch Valve Body Fail Closed Configuration



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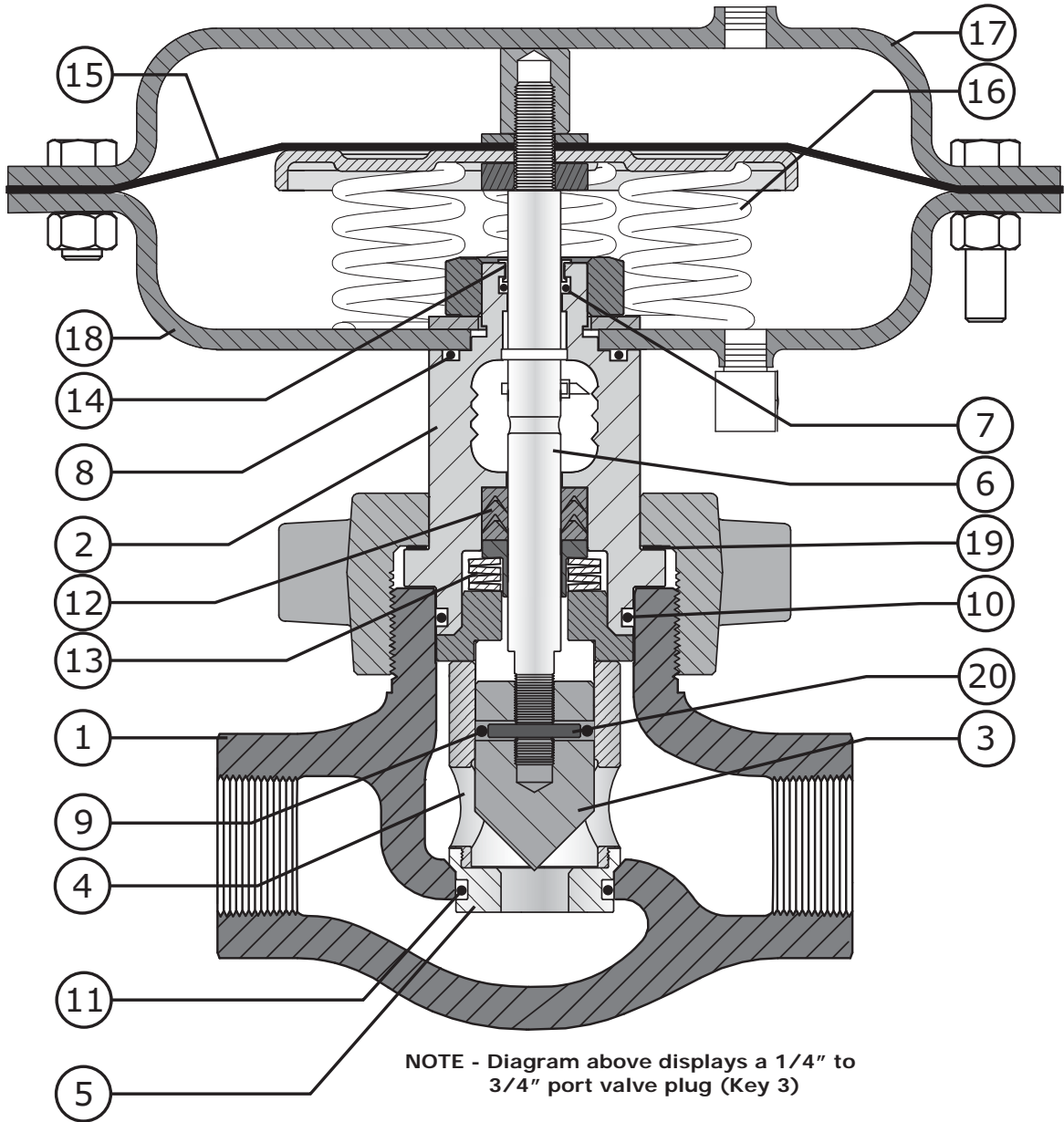


Figure 3 Cross-section of DF233 1 inch Valve Body Fail Open Configuration



Model DF233 Control Valve

Standard Construction Materials

Table 4

Key	Part Description	Standard Construction
1	Valve Body	ASME SA352 LCC, CF8M (optional)
2	Bonnet	ASME SA352 LCC, CF8M (optional)
3	Valve Plug	S17400 (17-4 DH 1150) (NACE), Tungsten Carbide (optional), CoCr-A (Alloy 6)(optional), S44004 (440C)(optional)
4	Cage	CF8M (S31600)
5	Seat Ring	S17400 (17-4 DH1150) (NACE) Tungsten Carbide (optional), CoCr-A (Alloy 6)(optional), S44004 (440C)(optional)
6	Valve Stem	S31600 (316 SST)
7, 8, 9, 10, 11	O-Ring	HNBR
12	Packing	PTFE / Carbon Filled PTFE
13	Spring Washers	NO7718
14	Valve Stem Bushing	Nylon
15	Actuator Diaphragm	Nitrile / Nylon
16	Actuator Springs	Steel / Zinc
17	Upper Casing	Steel / Zinc
18	Lower Casing	Steel / Zinc
19	Washer	S30200 (302 SST)
20	Pin	S31600 (316 SST)

DF233 RF and RTJ Valve Dimensions Inches (mm)

Table 5

Valve Size	Connection Style	A	B
1"	NPT	6.25 (159)	1.77 (45)
	ASME 150 RF	7.25 (184)	3.63 (92)
	ASME 300 RF	7.75 (197)	3.88 (99)
	ASME 600 RF	8.25 (210)	4.13 (105)
	ASME 900 / 1500 RF	9.38 (238)	4.69 (119)
	ASME 150 RTJ	7.75 (197)	3.88 (99)
	ASME 300 RTJ	8.25 (210)	4.13 (105)
	ASME 600 RTJ	8.25 (210)	4.13 (105)
	ASME 900 / 1500 RTJ	9.38 (238)	4.69 (119)
2"	NPT	7.50 (191)	1.73 (44)
	ASME 150 RF	10.00 (254)	5.00 (127)
	ASME 300 RF	10.50 (267)	5.25 (134)
	ASME 600 RF	11.25 (286)	5.63 (143)
	ASME 900 / 1500 RF	12.88 (327)	6.44 (164)
	ASME 150 RTJ	10.50 (267)	5.25 (134)
	ASME 300 RTJ	11.12 (282)	5.60 (141)
	ASME 600 RTJ	11.38 (289)	5.69 (145)
	ASME 900 / 1500 RTJ	12.88 (327)	6.44 (164)

NOTE: Refer to Figures 4 & 5



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Figure 4 DF233 1 inch Control Valve Dimensions inch (mm)

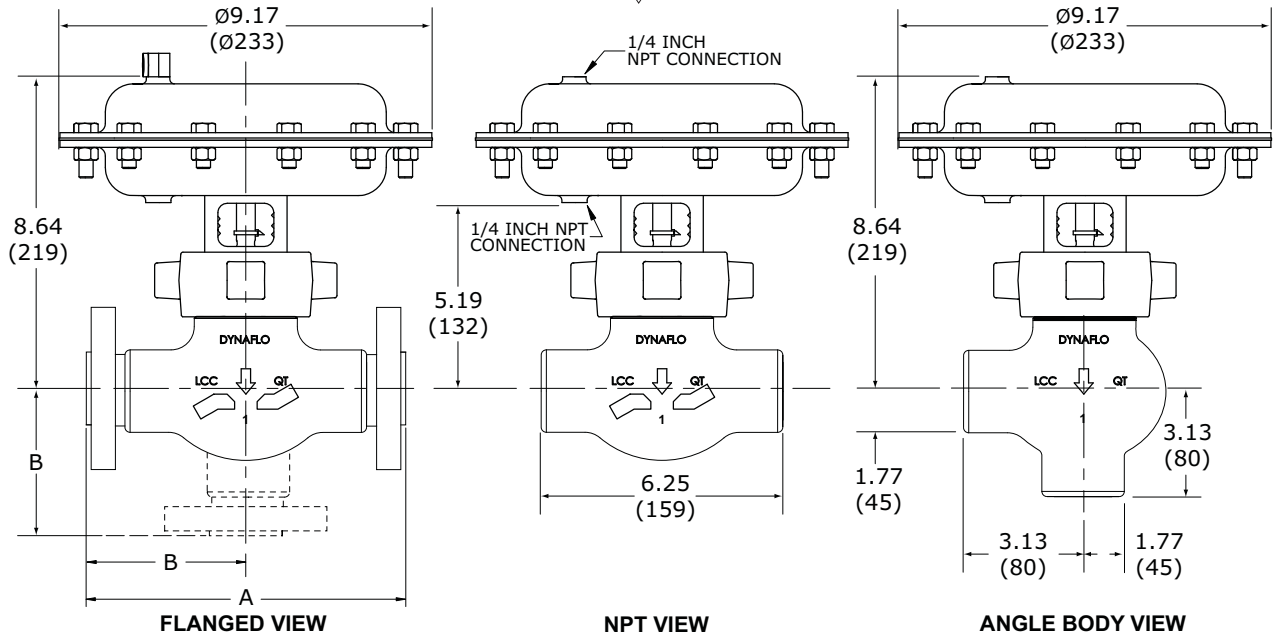
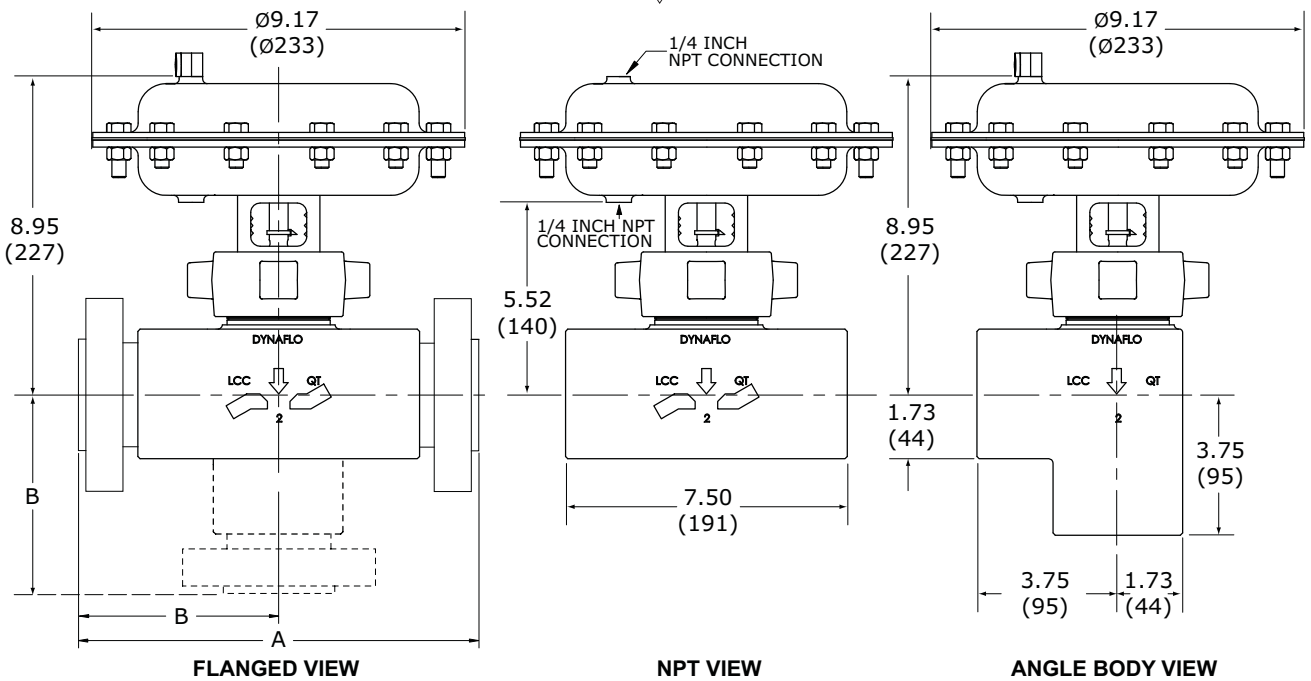


Figure 5 DF233 2 inch Control Valve Dimensions inch (mm)



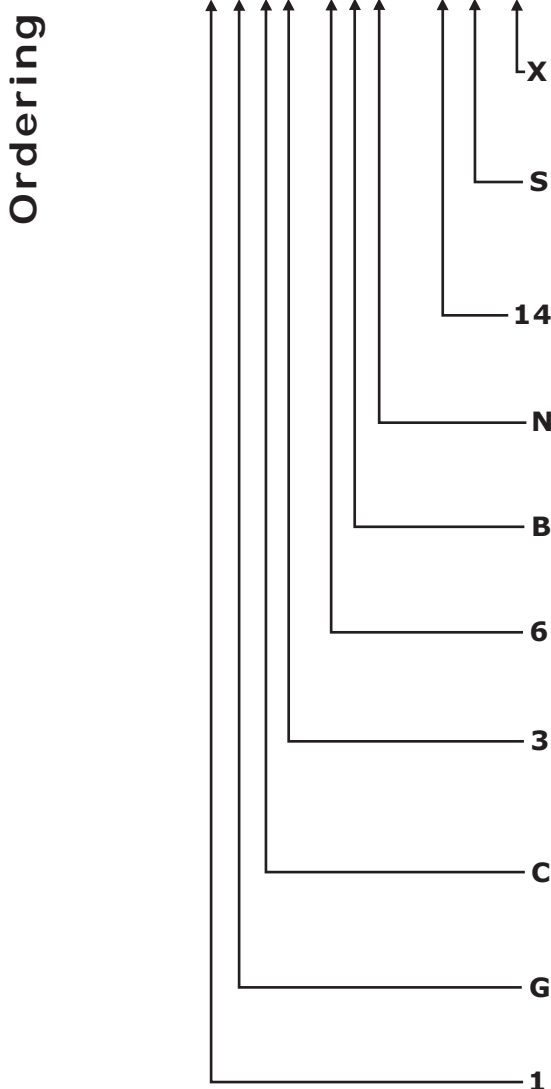


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Ordering Guide Dyna-Flo DF233 Control Valve | Model Numbering System

Sample Part Number

DF233-1GC3-6BN-14S-X



Code	Description
X	Special
Trim Material	
S	S17400 DH 1150
T	Tungsten Carbide
N	S44004 (440C)
A	CoCr-A (Alloy 6)
Trim Size	
14	1/4" 38 3/8" 10 1"
12	1/2" 34 3/4"
Connection Style	
N	NPT
F	RF
J	RTJ
ASME Rating	
A	150
B	300
E	1500
C	600
D	900
F	900 NPT
Number of Springs	
3	3 Springs
6	6 Springs
Spring Range	
3	Size 33 Actuator with 0-20 Psig Operating Signal
6	Size 33 Actuator with 0-35 Psig Operating Signal
Actuator Style	
C	Fail Closed
O	Fail Open
Body Style	
G	Globe Style
T	Angle Style
Body Size	
1	1 Inch Valve
2	2 Inch Valve

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